

Serial No. 10/618053
Page 10

REMARKS

I. Discussion of the Amendment

Claims 1-21 and 24 are pending in this application. Claim 23 is withdrawn. By this Amendment, claims 1, 7, 8, 19, 21, and 22 are amended. Claim 19 is amended by deleting the word "preferably" to overcome the rejection under 35 U.S.C. 112. New claims 25-33 are added. Support for new claims 25-34 can be found through out the specification, particularly, pages 9, 12-14, and 17-22. Claims 2, 6, 9-11, and 17 are cancelled without prejudice or disclaimer. Reconsideration in view of the above amendments and the following remarks is respectfully requested.

II. Rejection of Claims 1- 21 and 24 under 35 U.S.C § 103(a) as being unpatentable over Lau et al. (USP 6,306,253) in view of Koivukunnas et al., (USP Pub. No. 2003/0101880 A1) and further evidences by Singh et al. (USP 6,332,953)

Claims 1- 21 and 24 are rejected under 35 U.S.C. § 103 (a) as being unpatentable over Lau et al. (USP 6,306,253) in view of Koivukunnas et al., (USP Pub. No. 2003/0101880 A1) and further evidenced by Singh et al. (USP 6,332,953). This rejection is respectfully traversed.

The Examiner states That Lau et al. (USP 6,306,253) discloses the caliper of the paper seems to be within the claimed range (of the present invention), since they teach calipers of the calendered paper between 1.75-2.2 mils. (Office Action, Page 5, Lines 8-11). Applicants respectfully disagree. It is well known to one of ordinary skill in the art that caliper and bulk of a paper are related. Examiner's attention is directed to Col. 5, lines 2-5 which Lau et al. (USP 6,306,253) disclose " the resultant coated paper will generally have a bulk factor of 57-62%

Serial No. 10/618053

Page 11

which can be expressed as a function of its total weight as follows: **Caliper in mil x 1000 / Basis weight per ream (please note, this expression defined as bulk factor) “**. On the contrary, the present invention as recited in amended claim 1, disclose a ratio of the caliper to a basis weight of the coated paper is at least equal to or greater than 71%. In other words, the bulk factor of at least 71% in the present invention is much higher than 52-62% as taught by Lau et al. In fact the reason the present invention produces the high bulk of 71% attributed, at least in part, to the coating composition used as recited in the claimed invention. As demonstrated in the present invention and recited in the claims 1, 8, 12-16, 22, 25, 26, and 29, the improvement in LWC paper properties produced unexpected results when the pigment and the paper coating comprises a platy kaolin. For example, as shown in Figure 1, Coatings A and B contain platy kaolin while the Control Coating contains STD delaminated kaolin clay and Coating C contain fine engineered kaolin clay. Clearly, Lau et al. (USP 6,306,253) does not teach or suggest even remotely the criticality of using a platy kaolin clay as recited by the claims 1, 8, 12-16, 22, 25, 26, and 29 in the present invention. Lau et al. (USP 6,306,253) discloses “the pigments used may be, for example, # 2 clay, delaminated clay, calcined clay, TiO₂, and plastic pigment. (Col. 3 & 4, lines 67, 1 and 2, respectively). These delaminated clay and calcined clay of Lau et al. are of the type used in Coatings B and C which as experimentation has shown, are clearly inferior to the platy kaolin clays.

In addition, as described throughout the specification and recited in some aspect of the claimed invention, the platy kaolin is combined with the Shoe Nip Calendaring (SNC) to improve one or more properties such as Caliper (Fig. 1), Brightness (Fig. 2), Opacity (Fig. 3), and Sheet Gloss (Fig. 4). For example, in Fig. 1, several experiments are conducted to

Serial No. 10/618053

Page 12

demonstrate the effect of caliper in differences of Control Coating, Coating A, Coating B, and Coating C by using a platy kaolin versus conventional pigments (such as delaminated or calcined clays as used by Lau et al.) and also the impact on calendaring. By using B1 and B4 as basepapers, if B1 and B4 are not supercalendered but are processed by the treated process of this invention, then the retention of bulk is substantially higher (2.18 to 2.20 mils) as compared to supercalendering of B1 and B4 which is only 1.8-1.83 mils.

As a further example, the sheet gloss of the SNC paper of the substrate B1 was 30 % and the print gloss was 54 % resulting in "snap gloss" of 24%. "Snap gloss" is the difference between the sheet gloss and print gloss of a paper product and it is an indicator of visual impression of the printed paper to be interpreted by a user. While the sheet gloss of the B1 supercalendered paper was proximately 41 to 42%, the print gloss of B1 supercalendered paper was nearly 52% resulting in "snap gloss" of 10% (52% - 42%). It is significant to note that the "snap gloss" which is 14% points less than that of SNC B1 paper. Similarly, the sheet gloss of the SNC B4 sheet was nearly 33% while the print gloss of that sheet was 68% which resulting in "snap gloss" of 35%. On the other hand, the sheet gloss of the supercalendered sheet B4 is about 53% while the print gloss is proximately 76% resulting in negative snap gloss of 23% (53% - 76%). Similar improvements in "snap gloss" the print and sheet gloss are shown by comparing the data in Figs. 4 and 6 for the other B1 and B4 sheets coated with Coatings A , B and C with that of the supercalendered B1 and B4 sheets and those of supercalendered commercial products. Clearly, the above aspects of the invention as recited particularly in claims 1, 22, 25, and 29 are not disclose or suggested in Lau et al. (USP 6,306,253).

Serial No. 10/618053
Page 13

Koivukunnas et al., (USP Pub. No. 2003/0101880 A1) is not even a process invention and only relates to a roll system composed of a plurality of rolls arranged to be in nip contact with each other for producing mat quality paper web.

More importantly, the inapplicability of Lau et al. (USP 6,306,253) to the patentability of amended Claims 1, 25, and 29 is noted hereinabove and attention is invited to such discussions. The failure of Lau et al. as a primary reference in a combination of Koivukunnas et al., (USP Pub. No. 2003/0101880 A1) and further evidenced by Singh et al. (USP 6,332,953) is respectfully submitted to be inappropriate in view of the failure of Lau et al. to either teach, suggest or disclose a bulk factor is 71 and/or criticality of using a platy kaolin as discussed above.

Thus, irrespective of what Koivukunnas et al., (USP Pub. No. 2003/0101880 A1) teaches with respect to supercalendering for producing mat-quality paper web in combination with the teachings of Singh et al. (USP 6,332,953), the failure of Lau et al. as a primary reference negates the combination of Lau et al. in view of Koivukunnas et al., and further in view of Singh et al. as a basis for rejection of amended independent claims 1, 25, and 29 of the present application. Withdrawal of the rejection of claims is respectfully requested.

Therefore, Applicants respectfully submit that independent claims 1, 25, and 29 define patentable subject matter. The remaining dependent claims depend directly or indirectly from independent claims 1, 25, and 29 and therefore also define patentable subject matter. Accordingly, Applicants respectfully request the withdrawal of the rejections under 35 USC § 35 USC § 103.

Serial No. 10/618053
Page 14

CONCLUSION

Based on the foregoing amendments and remarks, Applicants respectfully submit this application is in condition for allowance. Favorable consideration and prompt allowance of claims 1, 7-8, 12-16, 19-22, and 24-33 are earnestly solicited.

Should the Examiner believes that anything further would be desirable in order to place this application in better condition for allowance, the Examiner is invited to contact Applicants' undersigned representative at the telephone number listed below.

A one month extension of time is believed to be required. The Commissioner is authorized to charge any fees associated with this or any other communication, or credit any over payment, to Deposit Account No. 09-0525.

Respectfully submitted,



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